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ABSTRACT

Financial support for implementing technology in the public schools has come from a wide spectrum of sources. How much is being spent, where the funds come from, and whether funding will be sustained ultimately determine the degree to which students will be participants in an increasingly technology-driven society. This edition highlights the pros and cons associated with financing technology through typical and uncommon means, drawing attention to initiatives where policymakers might take an active role. The issue includes examples of how states and districts have maximized savings and funded educational technology, the benefits and pitfalls in designing flexible budgets to support technology infrastructures via comprehensive school improvement initiatives, and the increasing need for budgeted, ongoing staff development for teachers and administrators integrating technology into their curricula. This issue lists fundraising and cost-saving possibilities to fund educational technology, restructuring budgets to support technology funding, and common challenges to funding efforts, such as the antitax sentiment, and lack of teacher proficiency with computers. (DFR)

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Sustaining Educational Technology: Funding Challenges and Opportunities for Policymakers. Policy Issues, Issue 4.

By Phil Vincent and Rachel Kaberon

North Central Regional Educational Laboratory

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POLICY ISSUES

Issue 4 February 2000

Although the federal government has funded educational technology at a proportionally higher rate than most school districts would typically expect, state and local governments are still left to shoulder the lion's share of funding.

About This Issue

Financial support for implementing technology in our public schools has come from a wide spectrum of sources. How much we are spending, where the funds come from, and our ability to sustain funding ultimately determine the degree to which students will be participants in an increasingly technology-driven society. This edition of Policy Issues *highlights the pros and cons associated with financing technology through typical and uncommon means, drawing attention to initiatives where policymakers might take an active role. Included in this issue:*

- *Examples of how states and districts have maximized savings and funded educational technology*
- *The benefits and pitfalls in designing flexible budgets to support technology infrastructures via comprehensive school improvement initiatives*
- *The increasing need for budgeted, ongoing staff development for teachers and administrators integrating technology into their curricula*

Sustaining Educational Technology: Funding Challenges and Opportunities for Policymakers

By Phil Vincent and Rachel Kaberon

Schools that neglect to teach students how to access and use information via technology run the risk of producing socially and economically disenfranchised members of society. Technology opens the doors to information. While there are perhaps a number of circumstances that make it more difficult for one school to reap the benefits of technology over another, funding issues inevitably surface over time and either inhibit or drive change in schools. Although the federal government has funded educational technology at a proportionally higher rate than most school districts would typically expect, state and local governments are still left to shoulder the lion's share of funding. In essence, the responsibility for financing technology in schools has always belonged and will continue to belong to individual school districts.

On average, states and local sources cover close to 85 percent of the total investment for creating a new technology infrastructure for schools.[1]

Realistically, one can point to a number of educational initiatives that are predominantly supported by state and local sources. While educational technology certainly isn't the first or last expenditure local sources will have to fund, it is one of the more enigmatic. Given the combination of major equipment purchases, the hiring of specialized staff, and the ongoing training of existing staff, technology funding holds a unique distinction. "It is neither a labor expense nor a capital expense nor a recurring material expense, but rather a hybrid."[2]

Inside This Issue

The Road Often Traveled: Raising Funds Absent a Technology-Specific Line Item 2
The Road Less Traveled: Restructuring Budgets to Accommodate Hybrid Expenditures 3
Common Ground, Common Challenges 4
Conclusion 5
Resources to Consider 6
Executive Summary Fax Sheet 7

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Despite the wide range of expenditures falling under the "technology umbrella," one might be tempted to argue that technology simply needs to find its place among state and district budgets—that it's more or less a matter of raising the necessary funds and tacking technology onto existing line items. Essentially, this is how most districts have approached the problem. Implementations to date have generally been accomplished via "add-on" funding, absent a line item in the budget.

Others may contend that the budgeting challenges associated with technology are representative of larger systemic reform issues. Flexible budgetary practices or budgets that adapt to the changing needs of schools and districts should, arguably, be inclusive of existing or future systemic reform efforts. If such malleable budgets existed, it might be easier for local governments to disperse and still track technology funds throughout other reform initiatives, such as curriculum development and staff training.

To reiterate, there are essentially two funding philosophies currently at work: local governments will either choose to continue to raise funds as needed, tacking technology onto existing line items in the budget, or they will attempt to incorporate and design flexible budgets that allow for a wider array of funding options. It would be unwise to advocate one philosophy over another, as budgetary reform, for instance, might be feasible in one state and next to impossible in another. As such, this *Policy Issues* will highlight the possibilities and challenges surrounding both philosophies.

The Road Often Traveled: Raising Funds Absent a Technology-Specific Line Item

Education budgets often allocate funds across sites and/or programs using formulaic ratios, centrally controlled budget categories, and/or pay scales. "Changes in spending patterns," Larry Picus observes, "if made at all, occur at the margins, with little change in the year-to-year allocation of resources among schools and between the central office and school sites."[3] A school seeking to move computers from a lab to classrooms will either require an alternative allotment from the district or have to raise the funds independently. In an effort to meet such challenges, local governments have sought innovative ways of avoiding additional public taxes and referendums while still making progress toward implementing their initial technology infrastructure goals.

Given the combination of major equipment purchases, the hiring of specialized staff, and the ongoing training of existing staff, technology funding holds a unique distinction.

Lease purchase financing arrangements, for example, can offer districts maintenance, support, and replacement of equipment at a lower initial and possibly overall cost. The lease arrangement may also fit more neatly with the limited annual funds made available to meet this combination of needs. Though these arrangements may realize an additional cost savings if scaled up beyond the district level, local presence is critical for maintenance and support and may be best left to the school to arrange.

Using lease purchase financing to fund technology training and services may prove a viable option to schools and districts because:

- Lease arrangements are typically quicker to approve than bonds.
- Purchases can be funded from the operating budget, as opposed to the capital budget.
- Lease funds may not be considered long-term debt and, therefore, may not require voter referendums.
- Schools and districts qualify for tax exemptions.
- Agreements often include maintenance, installation, software, and support.
- Schools and districts have the ability to flex payments and terms to fit [their own] timetable, the product's expected useful life, and budget constraints.[4]

Before suggesting or considering lease purchase financing, policymakers should consider whether or not their state's funding formula is conducive to leasing. "If the formula provides aid for current expenditures but not capital expenditures, it may be better to lease."[5]

While leasing allows schools and districts to delay or spread out technology expenditures over time, it does little in the way of raising additional funds. For some states, "gaming" has proven itself both a viable and potentially lucrative source of technology funding. In Nebraska, "LB 860 amended the lottery bill to provide an additional funding source (The School Weatherization Fund)

specifically for connecting schools to a statewide public computer information network. As the fund's loans are repaid over the next 15 years, they will provide approximately $13 million total in grants back to schools for their technology-related initiatives."[6]

In addition to Nebraska, the states of Georgia, Indiana, Ohio, and West Virginia also have funded parts of their educational technology initiatives through gaming. However, despite its acceptance as a funding source, "supporters must work to ensure that some proportion of these funds are dedicated [specifically] to [educational] technology. Funds obtained from this source are best applied to the initial costs of technology, as this revenue may vary over time and be unpredictable."[7]

Unfortunately, competing interests have a tendency to infringe on gaming funds that were originally earmarked for educational technology. As revenues ebb and flow in often unpredictable cycles, many states and districts have attempted to maximize resources by establishing purchasing collectives. Aggregating technology demand across public agencies within the community or across wider areas can often significantly reduce technology costs. With the backing of large purchasing collectives, school districts can obtain volume discounts and bulk contracts for service, maintenance, and support. Although these collaborations may step on the toes of local decision makers, the benefits typically outweigh the loss of autonomy.

"These arrangements are particularly useful for small, rural, or low-wealth districts, but even large, high-wealth districts that think they have enough buying power to *go it alone* should not overlook the potential benefits of joining a purchasing cooperative or consortium."[8] Local decisions that seek to standardize the community's choice of infrastructure (e.g., equipment, networks) have sometimes resulted in increasing the availability of community funds while spreading the costs across local agencies: hospitals and libraries, education departments, school districts, and other government departments.

Given that educational technology influences any number of curriculum and staff development initiatives, budgetary practices that afford sufficient flexibility to support wide-ranging expenditures are often inclusive of larger systemic reform efforts.

In addition to lowering costs, purchasing collectives are often relied upon for negotiating school districts through lengthy governmental purchasing bureaucracies. Along this line, many contend that cumbersome approval processes at both the state and district level have stalled the market's ability to significantly change the education community's dependence on standard-issue resources such as textbooks. "The combination of a small market, fragmentation, and a relatively more attractive home market has created a chicken-or-the-egg dilemma for courseware developers. If the demand for courseware were larger, developers would produce more and better educational products."[9] Because of their size, purchasing collectives have permeated the market, proving an effective voice for those who demand a greater selection of innovative, technologically advanced educational products.

The Road Less Traveled: Restructuring Budgets to Accommodate Hybrid Expenditures

School budgeting has historically been an incremental process—balancing expenditures with revenues to affect changes in spending—a process many policymakers view as constrictive. In most cases, enrollment generally drives both the allocation of revenue and the resources all the way down the line to school sites. Unfortunately, the corresponding per-student-staffing or funding formulas for supplies, materials, and textbooks bear little relationship to educational goals or technology plans. Spending categories for technology need to accommodate the demand for expenditures both over time and on an annual, equitable allocation basis.

States and districts may find it easier to create their educational technology plan in stages that build toward a long-term strategy or vision. The multiyear plan should take into account the additional start-up costs that will incur as their configurations change over time, or step up to a classroom model with low student-to-computer ratios and/or seek to maintain those ratios with rising enrollment. Sustaining student-computer ratios while simultaneously providing the necessary mixture of staff training, equipment upgrades, maintenance, and support, places most current school budgeting procedures in jeopardy. Unfortunately, schools and districts typically utilize budgets that were never designed with technology costs in mind. However, given that educational technology influences any number of curriculum and staff development initiatives, budgetary practices that afford sufficient flexibility to support wide-ranging expenditures are often inclusive of larger systemic reform efforts.

Regardless, the adopted technology plan must be flexible enough to adapt to changing budgetary conditions, while still being capable of matching existing and future resources to planned initiatives. The final stage of budgeting then becomes a simple cost exercise.

Initiatives such as "site-based management," for instance, have attempted to give schools greater flexibility by allowing schools to use their pot of money as they see fit. Theoretically, with the increased budgetary authority afforded under a site-based managed initiative, schools can allocate money away from expenditures that were yielding nominal returns or are no longer a priority and redirect funds to support such costly initiatives as technology. Although site-based management is conceptually sound and has been proven effective in the business community, it does require a dramatic change in leadership roles and responsibilities. For this reason, site-based managed schools often require an infusion of new staff or a good deal of time for existing staff to acclimate themselves to the additional responsibilities that come along with managing budgets.

Although the forms and methods of site-based management vary, the primary goal is typically the same: Shift authority away from individuals and into the hands of groups that are more closely connected to the school or community and, thus, are better equipped to realize and meet the specialized needs of students. Commonly, this strategy entails forming committees and site councils made up of teachers, parents, and members of the local community. In most forms, the school's principal acts as team leader, organizing the various groups and committing them to school goals and objectives.

Generally, 93 percent of the resources at the school-building level are devoted to salaries and benefits.[10] Aggregating resources for a strategic purpose, such as site-based management, inevitably means that resources must be taken from other activities. If widely agreed-to relations between investment acts and outcomes are not available, those losing resources will complain loudly and, if politically powerful, are likely to prevail. With that in mind, it is especially important that schools and districts looking toward site-based management as both a systemic and budgetary reform methodology receive the necessary buy-in from key players at all levels.

A less dramatic shift than site-based management, zero-based budgeting has afforded some districts the opportunity to "zero out" their budget each year and reallocate funds to unexpected or more pressing initiatives.[11] Under this type of budget plan, technology can be given top priority whenever appropriate. Although this practice may make long-term budgeting difficult to envision and sustain, it tends to put technology in the public eye long enough for technology initiatives to gain acceptance and public buy-in.

Common Ground, Common Challenges

Regardless of the budgeting methodology schools and districts choose to map their technology goals against, the anticipated costs will inevitably require significant contribution on behalf of the taxpayer.

In the 1998 U.S. General Accounting Office (GAO) report *Five School Districts' Experiences in Financing Technology Programs*, "local community resistance to higher taxes"[12] was cited as one of four barriers common across the five districts studied. The GAO report points out that although most districts felt their communities generally supported education, an "antitax sentiment affected their ability to pass special technology levies and bond measures."[13]

Taxes imposed at the federal, state, or local level (e.g., property or sales) may be unpopular in principal; however, public support and enthusiasm for educational technology implementations can be mobilized and provide a continuous revenue source. Lewis Solomon of the Milken Exchange suggests that the imposition of a 5-percent sales tax on all computers might be one way of yielding the $16-60 billion he estimates will be needed to effect technology implementation in schools nationwide.

As with any effort funded by taxpayer monies, it is especially important that the public have confidence in the state or district's motives. Presentations that offer hands-on, public demonstrations often provide the kind of grassroots credibility needed to bolster the support of the community.

Programs such as ParenTech (an NCREL/Ameritech collaboration, offering resource kits to parents of middle school children nationwide) are typically free to the public and provide a good deal of compelling information to parents. Likewise, the National Association for Partners in Education (NAPE) offers a wealth of targeted studies and guides that highlight replicable business/education partnerships. With an emphasis on the partnership development process, NAPE resources walk communities through various awareness-building strategies, in addition to providing a wealth of information on developing technology goals and related initiatives.

The taxpayer's understanding of the role technology plays in providing a

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competitive and challenging education can potentially make it easier for policymakers to raise proportions of school and district budgets for an all-too-often forgotten technology cost—the ongoing professional development of teachers and school administrators. Now more than ever, teachers and administrators must be increasingly proficient not only in the operation of computers, video equipment, and similar technologies, but also in their ability to instruct students in the use and application of these technologies.

While the amount of technology training provided to teachers has steadily risen over the past five years, many teachers remain unprepared, even uncomfortable with the computer. Results from Market Data Retrieval's 1998-99 School Technology Survey found that, of the U.S. schools surveyed, 38 percent rate their teachers' technology-use skill level as "beginner."[14] Likewise, as reported in *Education Week's* 1999 National Survey of Teachers' Use of Digital Content, "only 29 percent of teachers say they had more than five hours of technology training in curriculum integration within the past year."[15]

Reforms that sharpen the incentives for teachers to develop the skills needed in technology-rich schools could further support the need for staff training. Policymakers might consider making technology training more attractive by offering salary increases, free or discounted technology classes, or on-the-job training that can be counted as credit toward a higher degree. Or "income tax credits could be extended to teachers or administrators who take technology training courses or meet state certification guidelines for proficiency in the use of school technology."[16]

Conclusion

Typically, the methodologies most schools and districts use to fund their technology initiatives are short-term solutions. In lieu of waiting for comprehensive funding solutions that may never come to fruition, most districts wind up funding chunks of their technology plans absent essential components, such as staff training. Those attempting to locate additional technology funds through leasing agreements, purchasing collectives, and gaming may realize a portion of their technology goals, but are still apt to encounter problems tracking and reporting the use of the funds they've raised. Public backing for future, long-term technology initiatives will continue to be problematic for districts that have avoided a method of itemizing the disbursement of technology funds. In essence, the lack of adequate accounting or data on technology expenditures hampers any evaluation or analysis of the cost-effectiveness of the investment made to date.

Now more than ever, teachers and administrators must be increasingly proficient not only in the operation of computers, video equipment, and similar technologies, but also in their ability to instruct students in the use and application of these technologies.

For districts that choose to restructure their budgets, the road less traveled is an uncertain one. Initiatives such as site-based management require significant, long-term buy-in from the entire education community. Research indicates that site-based-managed districts may have to wait 10 to 15 years before significant systemic changes are realized. Many districts won't have the luxury of sustaining such a long-term reform strategy. However, as districts and schools devote more attention to streamlining their budgetary procedures, the benefits inherent in concepts such as site-based management and zero-based budgeting are likely to take less time to achieve than previous experiments have warranted. With the advent of the Internet, all schools will eventually have *real time* access to their own budgets and expenditures—a giant leap toward the realization of flexible budgeting.

Budgeted systemic reform strategies that weave technology into existing initiatives to improve student achievement will go further toward accomplishing overall reform-centered goals, while ensuring the continued financial support most technology initiatives currently lack. As with most major funding challenges there is no *silver bullet*. Educational technology is not a one-time only obligation. If technology funding is to be maintained or scaled-up to match the investments being made by our global competitors, we simply can no longer afford to relegate educational technology to somewhere outside ongoing reform frameworks. While it may be true that schools and districts have the ability to increase funding by reprioritizing needs and building innovations into current funding methodologies, change absent vision will achieve limited results.

Resources to Consider

"KickStart Initiatives are community-based efforts to bring the Information Superhighway to all individuals through schools, libraries, and community centers. This site, divided in four sections, offers guidance, ideas, tools, and real-world examples to help community leaders launch KickStart Initiatives." The following section, "Identifying Costs and Sources of Funding," may be especially helpful.

http://www.benton.org/Library/KickStart/kick.identifying.html

"CoSN, a non-profit organization, promotes the use of telecommunications in K-12 education to improve learning. Members represent state and local education agencies, nonprofits, companies and individuals who share our vision." A link to their paper, "Taking TCO to the Classroom – A School Administrator's Guide to Planning for the Total Cost of New Technology," as well as a variety of other useful resources are located on their site.

http://www.cosn.org/tco/resources.html

"For more than a quarter-century, *The Foundation Grants Index* has served as one of the most valuable resources for determining the current funding priorities of the nation's largest foundations. Both the annual volume and the quarterly issues of the *Grants Index* enable grantseekers and grantmakers to identify a foundation's giving interests by subject and geographic focus, types of organizations funded, types of support awarded, and population groups served."

http://fdncenter.org/grantmaker/trends/gi_intro99_1.html

"Since its founding in May 1996, Schools Online has helped more than 5,000 schools in 45 states obtain Internet equipment and effective online access." Schools Online may be able to offer schools assistance in obtaining equipment grants and related technology funding assistance. For further information, check out their Web site.

http://www.schoolsonline.org/

The American Association of School Administrators (AASA) has an excellent Web site, a large portion of which is dedicated specifically to the ongoing support of educational technology initiatives. For information on technology grants and funding, reference the following Web address.

http://www.aasa.org/Technology/funding.htm

The National School Boards Association has many relevant resources, including a Web-based "toolkit" that provides a wealth of information on federal funding resources.

http://www.nsba.org/sbot/toolkit/

The National Association of Partners in Education offers a number of valuable resources, empowering communities with tools that detail the education/business development process. Reference their site for more information.

http://www.napehq.org

Endnotes

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2. U.S. Department of Education, Investing in School Technology: Strategies to Meet the Funding Challenge, 1997, Washington, DC: Author, p. 9.
3. Picus, L., *The Challenges Facing School Districts in Budgeting for Technology* (http://www.bellsouthcorp.com/bsf/technology/picus/htm).
4. U.S. Department of Education, p. 48.
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6. Rule 88 (The School Technology Fund) http://www.mcrel.org/resources/technology/funding.asp.
7. U.S. Department of Education, p. 38.
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11. U.S. Department of Education, p. 52.
12. Carlotta C. Joyner, Director of Education and Employment Issues, before the Education Task Force, Senate Committee on the Budget, *School Technology: Five School Districts' Experiences in Financing Technology Programs*, GAO/T-HEHS-98-83 Jan. 29 (13 pages).
13. Ibid.
14. Market Data Retrieval, "1998-1999 School Technology Survey," as published in Education Week's 1999 Technology Counts (www.edweek.com/sreports/tc99/).
15. 1999 National Survey of Teachers' Use of Digital Content, *Education Week's Technology Counts '99*, September 23, 1999, p. 7.
16. U.S. Department of Education, p. 35.

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FAX SHEET

Executive Summary
Sustaining Educational Technology Funding

With expenditures that include the combination of major equipment purchases, the hiring of specialized staff, and the ongoing training of existing staff, schools and districts in the midst of implementing educational technology find themselves faced with a host of funding and budgeting challenges. As a means of addressing these challenges, decision makers typically choose one or a combination of two roads: raising funds as needed and tacking technology onto existing budgetary line items, or designing flexible budgets through systemic reform initiatives that allow for a wider array of funding options. Common challenges exist on both roads, along with options for policymakers to smooth out the bumps along the way.

Fund Raising and Cost-Saving Possibilities

- Lease purchase financing arrangements can offer districts maintenance, support, and replacement of equipment at a lower initial and possibly overall cost. Lease arrangements are often quicker to approve than bonds, may not require voter referendums, and are usually funded from a district's operating budget.

- Gaming has proven itself a viable and potentially lucrative source of technology funding to schools, but supporters must work to ensure that competing interests don't infringe on the funds.

- Districts have benefited from working with purchasing collectives to help aggregate technology demand across public agencies, share costs, and cut through lengthy purchasing bureaucracies.

Restructuring Budgets to Support Technology Funding

- Theoretically, with the increased budgetary authority afforded under a site-based-managed initiative, schools can allocate money away from expenditures that were yielding nominal returns or are no longer a priority and redirect funds to support such costly initiatives as technology.

- Some districts have had success with zero-based budgeting, a practice that involves "zeroing out" the budget each year so that priorities can be shuffled to meet expected demands. Under this type of budget plan, technology can be given top priority whenever appropriate.

Common Challenges

- Antitax sentiments have prevented many communities from raising additional technology funds. Awareness campaigns provided through organizations such as NCREL or the National Association for Partners in Education have been known to significantly sway public opinion, drawing particular attention to the importance of technology in education.

- While the amount of technology training provided to teachers has steadily risen over the past five years, many teachers remain unprepared, even uncomfortable with computers. Reforms that sharpen the incentives for teachers to develop the skills needed in technology-rich schools could further support the need for staff training.

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Additional Resources

To the Point: Technology Leadership Institute—Obtaining and Sustaining Funding

www.ncrel.org/sdrs/thepoint/fund.htm

Technology implementation is more than putting a computer in every class or connecting every classroom to the Internet. It also requires sustained professional development for staff and adequate funding for ongoing maintenance and upgrades. With school budgets already stretched to the limit, where can schools find the money they need?

Obtaining and Sustaining Funding, one of a series of online documents on technology planning for school and district leaders, examines the financial factors to consider when developing a long-term technology plan. These factors include selecting a technology model, identifying funding sources, and making sure that all expenses are included in the budget. Also included in the document are a list of goals and links to useful resources.

Technology Connections for School Improvement: Planners' Handbook and Teacher's Guide

Available online in PDF format at www.ncrel.org/tplan/tplanB.htm

The *Technology Connections for School Improvement: Planners' Handbook* describes eight dimensions of technology planning and implementation and was designed to guide a technology planning committee through the process of aligning their technology plans with school-wide reform efforts. It includes tips from research, school stories, Internet resources, and a toolkit for creating a technology plan that meets the learning needs of students at all levels.

A companion *Teacher's Guide* helps teachers who are just beginning to integrate technology into their daily classroom practices.

Computer-Based Technology and Learning: Evolving Uses and Expectations

When it comes to technology integration, proponents and critics, alike, search for proof that technology in the classroom can make learning more meaningful, engaged, and sustained. Policymakers, educators, and administrators want to see long-term learning gains if they are to invest a large amount of time and money integrating technology into the curriculum.

To better understand the impact of technology on learning, the authors of *Computer-Based Technology and Learning: Evolving Uses and Expectations* review existing research and document three phases of educational technology use: print automation, expansion of learning opportunities, and data-driven virtual learning.

To Order

To order a free copy of the *Technology Connections* books or *Computer-Based Technology and Learning*, visit NCREL's online catalog (www.ncrel.org/catalog/) or call our toll-free order number (800-356-2735). Quantities are limited.

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